Type DM6004 Virtual Input/Output Coupler

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The Type DM6004 Virtual Input/Output Coupler (VIO Coupler) provides an interface between a PROVOX® unit operations family controller and many other equipment manufacturer (OEM) products. This combines the unit operations controller capability of the PROVOX system with the logic capability of programmable logic controllers. In addition, automatic data collection may be used for both control unit decision-making and batch end reporting.

Compatibility

The VIO Coupler can connect to these Fisher Controllers:

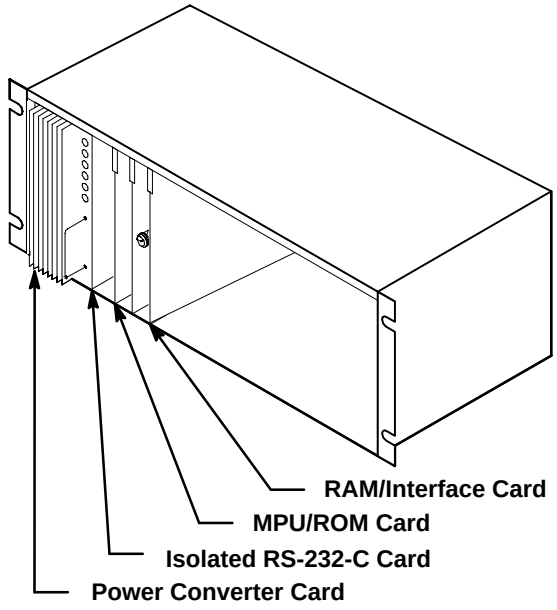
- SR90 MUX, IFC, and UOC controllers (Types CL6623 through CL6627)
- SR90 MUX, IFC, and UOC controllers (P3.0) (Types CL6633 through CL6637)
- Many previous-release unit operations family controllers

The VIO Coupler can connect to these other Fisher products:

- Type DM6001 Multiplexer Control Unit (MCU)

The VIO Coupler can connect to the OEM products listed below. Contact your Fisher representative for detailed information concerning connections to OEM products; factory programming of the VIO Coupler is required for operation with some OEM products.

- Allen-Bradley Programmable Logic Controllers
  - PLC2/20 and 2/30
  - PLC3 and 3/10
  - PLC 4
  - PLC 5
- Other programmable logic controllers
- Gas chromatographs, analog analyzers, remote telemetry systems, remote terminals, turbine control panels, data loggers, pneumatic multiplexers, weight loss controllers
- Other RS-232-C devices



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The specification table lists all PROVOX system card types the VIO Coupler emulates. The VIO Coupler can handle the maximum number of points of any PROVOX device with which it interfaces.

As an alternative to cabinet mounting in a Type CP7010 System Cabinet, the VIO Coupler card file can be wall-mounted along with the Type DM6001 Multiplexer Control Unit to make a remote interface station. Users provide the interconnecting multiplexer cable and RS-232-C cable.

Product Description

The VIO Coupler consists of:

- A card file
- A card set
- A cable tray

The card file fits on standard 19-inch (483 mm) EIA rails and can accommodate a VIO Coupler card set and an optional extender card set. The extender card set can communicate with a second smart I/O device on a separate local area highway system. The card file provides all internal electrical connections for the card sets.

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Specifications

I/O Emulation

Emulates a maximum of 16 multiplexer I/O files, each with as many as six I/O card files each. The VIO coupler emulates these Fisher I/O card types:

Discrete Input
Discrete Output: Latching or Momentary
Analog Input: Single-Ended 1 to 5 volts and 0 to 10 volts
Analog Input: Isolated 1 to 5 volts and 0 to 10 volts
Analog Input: Isolated −10 to 71.9 millivolts
Analog Input: Isolated thermocouple J, K, T, E, R and special ranges
Analog Output: 1 to 5 volts
RTD Input: −50 to 200 F, 100 to 500 F and special ranges
Pulse Counter Input
Weigh Scale Interface

Memory Available

4K bytes of random access memory and 64K bytes of programmable read only memory

Switches and Indicators

MPU ROM/RAM Card: Momentary switch resets the VIO. Pause switch puts the VIO into continuous self-test and resets the VIO when placed back in run position. Green LED is ON during normal operations and OFF during reset; red LED is OFF when UOC, UOC+, IFC or MCU interface is enabled.
RAM Interface Card: 8-position DIP switch selects the files the coupler will simulate (the top four switches select the upper file address, and the bottom four switches select the lower file address). Hexadecimal LED display provides status code.
Isolated RS-232-C Card: Two green LEDs on the front card edge. The top LED lights when the card self-test is passed (it does not light if the self-test fails). The bottom LED lights when communication is established with the PLC.
Power Converter Card: Green LED lights when all voltages on the card are normal.

Power Required

24 volts dc

Mounting

Card file fits on 19-inch (483 mm) EIA rails. Each file requires 8.5 inches (216 mm) height space. Optional wall mounting

Number of Devices (Channels) Supported

One (two per file with the expander card set)

Communications Link Supported

RS-232-C, with a 50-foot maximum. The VIO coupler may be located up to 50 feet from the control unit.

Communications Speed

Up to 19,200 baud with a buffer transfer rate of 1 to 5 seconds

Electrical Classification

Refer to the Nonhazardous Area Classifications bulletin, 4.7:001.

Operating Conditions(1)

Conditions	Reference Limits (1)	Normal Limits (1)	Operative Limits (1)	Transport & Storage Limits (1)
Ambient Temperature (1)	73 & 81°F (23 & 27°C)	41 & 122°F (5 & 50°C)	32 & 131°F (0 & 55°C)	40 & 149°F (40 & 65°C)
Maximum Temperature Variation	3.5°F/h (2°C/h)	36°F/h 20°C/h)	9°F/min (5°C/min)	18°F/min (10°C/min)
Ambient Relative Humidity (without condensation)	35 & 40%	10 & 90%	5 & 95%	5 & 95%
Electromagnetic Field(2)	0.1 V/m 20 to 1000 MHz	3 V/m 20 to 1000 MHz	10 V/m 20 to 1000 MHz	

1. ISA Standard ISA S51.1-1979 defines these terms.
2. SAMA Standard PMC33.1-1978 explains these conditions, which apply only when the unit is installed in a system cabinet and all cabinet doors are closed.

The controller recognizes the PLC I/O as if it were controller I/O. The VIO Coupler reads and writes discrete, analog, or pulse counter input/output values from a data table within the PLC, then reports these values to the controller. In this way, the VIO Coupler simulates a set of multiplexer I/O files. Up to eight I/O couplers can be located on one Allen-Bradley highway.

The card set includes:

- A microprocessor unit (MPU/ROM) card
- A RAM interface card
- An isolated RS-232-C input/output card
- A power converter card

An optional expander card set is available to provide a second VIO Coupler in the same file.

The MPU/ROM card contains a Motorola microprocessor module, a bus interface, a terminator, random access memory, and a programmable read only chip that contains the VIO software. The MPU/ROM card acts as the interface between the RAM interface card and the isolated RS-232-C I/O card that communicates with the PLC. It also performs all control and self test functions for VIO Coupler.

The RAM interface card contains the buffering and control hardware for virtual communications with the unit operations controller (UOC), integrated function controller (IFC), or multiplexer control unit (MCU). Two way asynchronous communications between the MPU and the UOC, IFC, or MCU are accomplished on the card through the use of two RAM buffers.

The isolated RS-232-C input/output card provides a communications interface between the MPU/ROM card and the PLC. This card also protects the VIO Coupler through the use of optical isolation from the RS-232-C link with the PLC.

The power converter card provides the necessary operating power for the card set from a 24 volt dc supply.

Ordering Information

To order a Type DM6004 Virtual Input/Output Coupler, specify it using the information below. Many OEM interface applications require factory-developed programming. To order a VIO Coupler with special programming, contact your Fisher representative or sales office.

- Type DM6004 Virtual Input/Output Coupler
- Type DM6004 Virtual Input/Output Coupler with Expander card set
- Expander card set

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